NTSB ID: DEN03FA025 Aircraft Registration Number: N421D

Occurrence Date: 12/25/2002 Most Critical Injury: Fatal

Occurrence Type: Accident Investigated By: NTSB

Location/Time

Nearest City/Place	State	Zip Code	Local Time	Time Zone	
Akron	co	80720	1006	MST	
Airport Proximity: Off Airport/Airstrip	Distance From Landing Facility:		0.5	Direction Fro	m Airport: 270

Aircraft Information Summary

· · · · · · · · · · · · · · · · · · ·		
Aircraft Manufacturer	Model/Series	Type of Aircraft
Cessna	421	Airplane

Sightseeing Flight: No Air Medical Transport Flight: No

#### Narrative

Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:

HISTORY OF FLIGHT

On December 25, 2002, at 1006 mountain standard time, a Cessna 421, N421D, piloted by a private pilot, was destroyed when it impacted terrain 1/8 mile west of the Akron/Washington County Airport (AKO), Akron, Colorado. A post crash fire ensued. Visual meteorological conditions prevailed at the time of the accident. The personal cross-country flight was operating on an instrument flight rules flight plan from Englewood, Colorado, to Mitchell, South Dakota, under the provisions of Title 14 CFR Part 91. The pilot and passenger on board sustained fatal injuries. The flight originated at 0933.

At 0959, the pilot reported to the Denver Air Route Traffic Control Center (ZDV) that his left engine had an oil leak and requested to land at the nearest airport. ZDV informed the pilot that AKO was the closest airport and subsequently cleared the pilot direct to AKO.

At 1001, the pilot reported having the airport in sight. ZDV radar showed the airplane in a 3,000 foot per minute descent passing through 17,000 feet mean sea level.

At 1003, ZDV terminated radar service, told the pilot to change to the advisory frequency, and reminded him to close his flight plan.

At approximately 1004, ZDV radar lost contact with the airplane. When contact was lost, the airplane was approximately 3.5 miles southwest of the Akron VOR and 5 miles south of the airport.

At 1016, ZDV contacted Denver Flight Service to ensure the airplane had landed at AKO and the pilot had closed his flight plan. Flight Service said they had not heard from the pilot, but would look into it. At 1023, Flight Service contacted the Washington County, Colorado Sheriff and asked if they could send a car to AKO to see if the pilot was there. At 1029, Flight Service informed ZDV that the sheriff's department said "he ran off the runway and thundered it up a little bit ..."

A witness on the ground observed the airplane come from the north toward the airport. He said the airplane made a sharp right hand turn over a football field and flew west over the old runway. The witness said he saw a vapor trail coming from the right side tail. He said he could hear what sounded like one engine. The witness estimated the airplane was 1,000 feet above the ground.

Two witnesses driving eastbound toward the airport reported seeing the airplane flying westbound. The airplane was then observed to suddenly pitch nose down, "spiral two times, and crash."

PERSONNEL INFORMATION

The pilot held a private pilot certificate with single and multiengine land, and instrument

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ratings. The pilot's logbooks sustained fire damage in the accident. The information derived from the logbook indicated that the pilot had 1,230.2 total flying hours. The logbook showed the pilot had 1,068.8 hours as pilot-in-command and 252.7 hours in multiengine land airplanes. The logbook also showed the pilot having 21.6 hours in the accident airplane. This time was logged between June 24, 2002, and November 19, 2002. The logbook also showed the pilot completed a flight review and instrument competency check on June 21, 2002.

Aircraft insurance records indicate the pilot completed an initial flight training course for the Cessna 421 at Champaign, Illinois, on June 21, 2002. The training course consisted of 8.0 hours of classroom instruction and 9.5 hours of simulator flight training.

#### AIRCRAFT INFORMATION

The airplane was manufactured in 1967, was owned and operated by the pilot, and used for pleasure. The airplane's current registration was dated June 4, 2002. According to repair station records, an annual inspection was performed in Tulsa, Oklahoma, on April 10, 2002. A pre-purchase evaluation was done on the airplane on May 6, 2002. At the time of that evaluation, the total airframe time was 3,532 hours. The airplane's Hobbs meter and tachometer were destroyed by impact and fire in the accident; however, pilot records indicate the airplane was flown at least an additional 21.6 hours.

#### WRECKAGE AND IMPACT INFORMATION

The National Transportation Safety Board on-scene investigation began at 1550.

The accident site was located in a pasture approximately 150 feet west of Washington County Road AA5, a north-south running gravel road, and at geographical coordinates 40 degrees 11.001 minutes north latitude, and 103 degrees 14.315 minutes west longitude.

An area of burned grassland encompassed the accident site. The accident site covered an area approximately 205 feet north to south and 163 feet east to west. The accident site began with two impact craters located at the site's north edge, running along an east-west line. The western-most crater was 2 feet long, 4 feet wide and 18 inches deep. The airplane's left propeller hub, spinner cone, and two blades rested upright in the crater. The left propeller was oriented on a 360-degree magnetic heading. The second crater was 14 feet east of the west crater. It was approximately 3 feet long, 20 inches wide, and 20 inches deep. The airplane's right propeller and spinner were embedded in the crater at a 54-degree down angle from horizontal. Both propellers were broken off at the flanges.

The left propeller hub was broken where the third of a 3-bladed propeller was seated. The third propeller blade rested just south of the left propeller and west crater. The spinner cone was crushed aft around the propeller cylinder and hub. The two blades with the hub were at the low pitch position and showed charred and slight aft bending. There were chordwise scratches on the front-facing sides of the two blades near the blade tips, beginning at the blades' leading edges. The third blade was bent rearward and charred.

The right propeller's spinner cone was crushed aft around the hub cylinder and hub. The propeller hub was broken. The three propeller blades were at the low pitch position. All three blades showed torsional bending, chordwise scratches, and leading and trailing edge nicks and gouges.

In the area between the two propellers, running northward of the east-west line the propellers lay along, were numerous pieces of clear Plexiglas. The pieces ran northward of the east-west line for approximately 21 feet. The pieces were fragmented, charred and melted. The airplane's VHF antennae rested upside down on the ground 12 feet north of the left propeller. It was broken off at the base. Approximately 35 feet north-northeast of the left propeller rested a piece of the

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left wing tank and fuel cap.

Approximately 3 feet to the right of the east crater and right propeller was a 3-foot by 3-foot piece of the front cabin wall. At 8 feet east-southeast of the right propeller were a nose baggage door and the front portion of the right wing tip fuel tank. The baggage door was broken out at the hinges and latches. The latches were flush with the door and the latch bayonets were extended. The inner side of the door was charred and melted. The right wing tip fuel tank was crushed aft and broken open. The tank portion was also charred and melted.

Approximately 14 feet west of the west crater and left propeller was the front portion of the left wing tip fuel tank. It was crushed aft, broken open, charred and melted.

In an area beginning at the east-west line described by the two craters and the left and right propellers, and running south for approximately 28 feet was a debris field. The debris field contained pieces of fragmented instrument panel, flight instruments, a main landing gear door, pieces of wing skin, cowling doors, and engine components.

At 28 feet south of the propellers and impact craters were the remains of the airplane's nose section, instrument panel, cabin, wings, right engine and nacelle, and main and nose landing gear. The airplane's wings and fuselage were oriented on a 180-degree magnetic heading. The nose section of the airplane, to include the baggage compartment, nose gear, nose gear wheel well, and avionics, was crushed aft to the cabin area, broken open, fragmented, melted and consumed by fire. The forward fuselage, including the pilot and front passenger seats, instrument panel, control yokes, rudder pedals, center control console, interior walls and floor, was crushed aft, fragmented, charred, melted, and consumed by fire. The aft cabin section to the pressure bulkhead was broken open, crushed downward, charred and melted. The roof of the cabin and left side cabin wall, passenger windows, passenger seats, and cabin door were melted and consumed by fire.

Approximately 9 feet of the airplane's left wing beginning at the root and running outward remained attached with the fuselage. The inboard wing skin was charred melted and consumed. The left engine nacelle was crushed aft and broken open, fragmented, melted, and consumed by fire. The airplane's left engine was broken out from the mounts. A 7-foot long section of leading edge skin from the left outboard wing section rested south of the remaining left wing spar. It was crushed aft, charred, and melted. The airplane's left flap was melted and consumed by fire. The left main landing gear was extended, charred and melted. The left main tire was consumed by fire. The left aileron was broken out and found resting beneath the section of forward leading edge skin. It was charred and melted. Flight control continuity to the left aileron was confirmed. The remainder of the outboard wing section and left main auxiliary (wing) fuel tank were broken aft and consumed by fire.

The majority of the right wing was present with the center fuselage and remaining left wing section. The majority of the right wing was crushed aft starting at the wing root and running outward to where the right tip tank attached. The right wing was charred and melted from the root to the right engine nacelle. The right nacelle was broken aft and bent right. The right engine was with the nacelle. It was charred and melted. The right wing outboard of the engine nacelle was crushed aft, charred, melted and consumed by fire. The right flap was melted and consumed by fire. The right main landing gear was broken aft, charred, and melted. The right main landing gear tire was consumed by fire. The right aileron was broken out. The left aileron was found resting 14 feet east of the remains of the airplane's left wing. It was charred and melted. Flight control continuity to the right aileron was confirmed. The right wing tip fuel tank was broken aft longitudinally.

At 8 feet southeast of the wings and fuselage remains was the aft fuselage, part of the left wing tip fuel tank, and the empennage. The empennage was resting upright and was oriented on a 225-degree magnetic heading. The aft fuselage was broken downward at a 55-degree crush angle. The

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dorsal fin leading to the vertical stabilizer was crushed downward, fragmented, and melted. The leading edge of the vertical stabilizer, from the fin (root) to the tip was crushed aft approximately 8 to 10 inches. The top of the vertical stabilizer was crushed downward approximately 6 inches. The right side of the vertical stabilizer and rudder were charred and melted. The top of the vertical stabilizer and rotating beacon were melted. The left side of the vertical stabilizer and rudder showed heat damage. The rudder was intact. The trailing edge tip of the rudder was crushed downward and melted.

The right horizontal stabilizer and right elevator were intact. The top skin was charred and melted. The bottom skin showed charring and paint blisters. The tip of the right elevator was crushed aft. The left horizontal stabilizer was intact. The bottom skin showed charring and paint blistering. The inboard two feet of the left elevator was crushed inward. The trailing edge tip of the left elevator was bent upward. The outer two feet of the leading edge and bottom of the left horizontal stabilizer was covered with oil. Oil was found spattered along the bottom inboard skin of the left horizontal stabilizer and rudder. Flight control continuity to the rudder and elevators was confirmed.

The airplane's left engine rested upright beneath the left horizontal stabilizer. The engine showed minor charring due to fire. The bottom oil sump was crushed upward. Two holes, approximately 2-3 inches in diameter were found in the top of the crankcase, just aft of the center of the engine. An epoxy-type resin was observed covering the top crankcase seam beginning beneath the induction manifold and running aft to the back of the engine.

From the airplane fuselage and wings running south for 55 feet was a second debris field. The debris field contained pieces of wing and fuselage skin, pieces of nacelles, engine components, and the aft portion of the left wing tip fuel tank. The extent of the burned grassland area ended at the south edge of the second debris field.

An examination of the surviving airplane systems showed no anomalies. The airplane's engines and propellers were retained for further examination.

#### FIRE

At 1006, the Washington County Sheriff Office received a 9-1-1 emergency call that an airplane was down 1-1/2 mile north of AKO. Units from the Akron Fire Department and Emergency Medical Services were dispatched at 1007. The units were on scene by 1012. By 1116, the fire was out.

A burned area of pasture grassland surrounded the majority of the main aircraft wreckage. The area extended from the two craters east-northeast for approximately 70 feet, west for approximately 90 feet, and south-southwest for approximately 200 feet.

#### MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was conducted by the Washington County Coroner at Loveland, Colorado, on December 27, 2002.

The results of FAA toxicology testing of specimens taken from the pilot were negative for all tests conducted.

### TESTS AND RESEARCH

The engines were examined at Teledyne Continental Motors, Mobile, Alabama, February 19-20, 2003.

An examination of the airplane's left engine (GTSIO-520D, serial number 219418) showed two holes in the top of the engine case. The first hole was located 1-1/2 inches right of the top seam of the

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case approximately 11 inches from the rear of the engine. The hole was approximately 2-1/2 inches long and 2 inches wide. The second hole was located 1/2 inch left of the top seam of the case and approximately 11 inches from the rear of the engine. This hole was 1-1/2 inches long and 1 inch wide. The engine was disassembled and examined. The oil sump showed metal fragments resembling bearing material and push rod material. A push rod bolt and a bolt neck were found among the metal debris in the sump. The number 2 rod was broken at the journal. The bottom of the number 2 piston and the broken rod end were heavily spalded. The number 3 rod was broken at the journal. The bottom of the number 3 piston showed heavy spalding. The case halves showed fretting at the seam and through bolts. All 6 cylinders showed fretting between the bases and the case where the connecting bolts went through. The bearings showed rubs indicative of slippage. The outside of the engine case showed heat and oil discoloration.

The right engine (GTSIO-520D, serial number 601065) was disassembled and examined. The case halves showed fretting at the seam and through bolts. All 6 cylinders showed fretting between the bases and the case where the connecting bolts went through. The bearings showed rubbing through to the copper material. The outside of the engine case showed signs of oil seepage around the seals. The outside case also showed heat and oil discoloration.

The right engine examination showed indications that the engine had major work performed. The cylinder rims had been topped. The examination also showed the cylinders, crankshaft, pistons, and piston pins used were not from the manufacturer. Tracking the parts' numbers revealed the cylinders were manufactured in October 1977. Many of the other parts' numbers reflected manufacturing dates close to that of the cylinders.

The propellers were examined at McCauley Propeller Systems, Vandalia, Ohio, on April 9-10, 2003. The examination showed the propeller blades positions consistent with both propellers being at or near low pitch. The examination also showed evidence that the right propeller was being operated under conditions of power at impact, and the left propeller was operating under conditions of low or no power at impact.

According to the propeller manufacturer, with this model propeller, if a sudden engine seizure occurs, the propeller is below the propeller lock latch rpm. In this situation, the pilot cannot feather the propeller.

Repair station maintenance work orders and records provided by the pilot's sister showed that on May 17, 2002, the airplane was brought in for a left engine oil leak. Records showed that a 3/4 inch crack was found at one of the case half bolts beneath the induction manifold. The records indicate the case was retorqued and the case halves were sealed with "Lock O Seals." On June 4, 2002, the airplane was brought back for another left engine oil leak. The records indicate the repair station found minor seepage at the oil filler neck, number 4 push rod seals, and the front seam of the oil sump. The records showed the engine and cowling were washed and the cowling was reinstalled. The repair station recommendation was that the engine be washed down at each oil change. On July 9, 2002, the airplane was brought back to have the oil changed on the left and right engines.

The May 6, 2002 pre-purchase inspection report reflected a review of the airplane's logbooks and indicated the following:

The left engine was a factory rebuild. It was installed on April 9, 1984. At the pre-purchase inspection, the engine had 1,548.7 hours since rebuild.

The right engine was a factory new engine. It was installed in May 15, 1992. At the pre-purchase inspection, the engine had 1,078.0 hours.

Both propellers were overhauled on October 6, 1994. At the pre-purchase inspection, the propellers

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had 907.2 hours.

The inspection noted that manufacturer's recommended overhaul period for the propellers was 60 months and 1,200 hours, whichever occurs first. The manufacturer's recommended overhaul period for the model engines was 12 years and 1,600 hours, whichever occurs first.

#### ADDITIONAL INFORMATION

Parties to the investigation were the FAA Flight Standards District Office, Denver, Colorado, the Cessna Aircraft Company, Teledyne Continental Motors, and McCauley Propeller Systems.

The airplane wreckage and all tested components were returned and released to Beegles Aircraft Services, Greeley, Colorado, on June 6, 2003.

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AVIATION	ırrence Ty	ence Type: Accident											
Landing Facility/Approach In	formation						·						
Airport Name			Airport ID	):	Airport Elevation	n	Run	way Used	Runway Length		h	Runv	way Width
Akron/Washington County	AKO		4714 Ft. M	ISL	11 7000			00		100			
Runway Surface Type: Asphalt													
Runway Surface Condition: Dry													
Type Instrument Approach: NONE													
VFR Approach/Landing: Straight-	in												
Aircraft Information													
Aircraft Manufacturer					eries					Serial	Numbe	er	
Cessna			42	1						421-0	0045		
Airworthiness Certificate(s): Normal													
Landing Gear Type: Retractable	- Tricycle												
Homebuilt Aircraft? No							Certified Max Gross Wt. 6500					Engines: 2	
				Engine Manufacturer: Model/Series: Continental GTSIO-520-D									ed Power: 5 HP
- Aircraft Inspection Information											·		
Type of Last Inspection			Date of L	Date of Last Inspection Time Since Last Inspection					ection		Airfrar	ne To	tal Time
Annual			04/200	04/2002 22.1 Ho					ours 3564.1 Hours			64.1 Hours	
- Emergency Locator Transmitter (	ELT) Information												
ELT Installed? Yes	ELT Opera	ted? No	)		E	ELT Aid	ded ii	n Locating Ad	cident S	ite? No	)		
Owner/Operator Information													
Registered Aircraft Owner			Stree	Street Address 189 E. Turf Lane									
Robert A. Rumachik			City	City Castle Rock								e	Zip Code 80104
			Castle Rock CO 80104 Street Address										
Operator of Aircraft			Same as Reg'd Aircraft Owner										
Same as Reg'd Aircraft Owner			City	City							Stat	e	Zip Code
Operator Does Business As:					Op	perator Desig	nator Co	ode:	•				
- Type of U.S. Certificate(s) Held: I	None												
Air Carrier Operating Certificate(s)	:												
Operating Certificate:					Operator Cert	tificate	):						
Regulation Flight Conducted Unde	r: Part 91: Gener	al Aviat	tion										
Type of Flight Operation Conducted	d: Personal												
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	AVIATI	Occurrence Type: Accident												
First Pilot	Information													
Name						City				Sta	ate	Date of Bi	rth	Age
On File						On File	ile On File On Fi							50
Sex: M Seat Occupied: Left Principal Profession: Business									- (	Certifica	ate Num	ber: On Fi	le	•
Certificate(s): Private														
Airplane Ra	ating(s): Multi	i-engine Lar	nd; Single-e	ngine Land										
Rotorcraft/Glider/LTA: None														
Instrument Rating(s): Airplane														
Instructor Rating(s): None														
Type Rating/Endorsement for Accident/Incident Aircraft? No  Current Biennial Flight Review? 06/2002														
Medical Ce	rt.: Class 2	Medica	al Cert. Status	S: None					Date o	f Last M	1edical E	Exam: 08/2	2002	
· '														
- Flight Tim	ne Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Mult-Engine	Night	In Actual		Instrument Simulated		Rotorcraft	Glid	er	Lighter Than Air
Total Time		1230	22	978	231		74	1	5	52				
Pilot In Cor	nmand(PIC)	1069	22											
Instructor														
Last 90 Day	ys	3	3		3									
Last 30 Day		2	2		2			-	-			_		
Last 24 Ho		1	1		1	<del>                                     </del>								
Seatbelt Us	sed? Yes	Shou	lder Harness	Used? Yes		Т	Toxicology Performed? Yes Second Pilot? No							
Flight Pla	n/Itinerary													
Type of Flig	ght Plan Filed: <b> F</b>	R												
Departure F	Point					:	State Airport Id			Identifier Departur		rture Time	ture Time Time 2	
Englewoo	od					(			<b>\PA</b>		0933		l	MST
Destination						,	State	e Ai	port Iden	tifier				
Mitchell							SD MHE							
Type of Cle	earance: IFR													
Type of Air	space: Class	E												
Weather	Information													
Source of I	-	ord of briefi	ng											
Method of	Briefing: Unkno	wn												
				FACTUAL	REPORT	- AVIA	ΓΙΟΙ	 N						Page 3

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A TYBOR				Occurrence Type: Accident										
Weather	Information													
WOF ID	Observation Time	Time Zone	WOF	Elevati	on	WOF D	istance Fr	om Acci	dent Site	ent Site Direction From Accident Site				
AKO	0953	MST	4	714 Ft.	MSL				1 NM	90 Deg. N			Mag.	
Sky/Lowes	st Cloud Condition: Clea	ır	•			•	Ft. /	AGL	Condition of Light: Day					
Lowest Ce	eiling: None			Ft. AGL			oility:	SM	Alti	meter:	30.04	"Hg		
Temperatu		-8 °C Wind Direction: 310 Density Altitude:							3221	Ft.				
Wind Spee	ed: 5	Gusts:			Weath	ner Cond	tions at Ac	cident S	ite: Visual C	Cond	itions			
Visibility (F	RVR): Ft.	Visibility	y (RVV)		SM	Intensit	ty of Precip	oitation:						
Restriction	Restrictions to Visibility: None													
Type of Precipitation: None														
Accident	Information													
Aircraft Da	mage: Destroyed		Air	Aircraft Fire: Ground					Aircraft Explosion Ground					
Classificati	ion: U.S. Registered/L	J.S. Soil	•											
- Injury Su	mmary Matrix	Fatal	Serious	Mino	r	None	TOTAL							
First Pi	ilot	1						1						
Second	d Pilot							7						
Studer	nt Pilot							7						
Flight I	nstructor							7						
Check	Pilot							7						
Flight E	Engineer							7						
Cabin /	Attendants							┨						
Other (	Crew							7						
Passer	ngers	1						1						
- TOTAL /	ABOARD -	2			$\top$			2						
Other (	Ground	_						╡						
	D TOTAL -	2						2						
				-	'			•						

National Transportation Safety Board

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### Administrative Information

Investigator-In-Charge (IIC)

David C. Bowling

Additional Persons Participating in This Accident/Incident Investigation:

Thomas J Forchtner Air Safety Inspector Federal Aviation Administration Denver, CO 80249

Tom Moody Air Safety Investigator Cessna Aircraft Company Wichita, KS 67215

Scott Boyle Air Safety Investigator Teledyne Continental Motors Arvada, CO 80005

Tom Knopp Chief Engineer - Propeller Systems McCauley Propeller Systems Vandalia, OH 45377